

ANALYSIS OF THE FIRST AND SECOND TRIADS OF H₂S FROM 2200 TO 4100 cm⁻¹

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The 1800-5400 cm⁻¹ region of H₂S was recorded at 0.011 cm⁻¹ resolution using the McMath Fourier transform spectrometer located at Kitt Peak National Observatory. The positions of the first triad [2 ν_2, ν_1 and ν_3] near 4 μm and the second triad [3 $\nu_2, \nu_1 + \nu_2$ and $\nu_2 + \nu_3$] near 2.7 μm were obtained for H₂³²S, H₂³⁴S and H₂³³S. The experimental upper states were fitted to the A-reduced Watson Hamiltonian to determine precise sets of rotational constants and Fermi and Coriolis coupling parameters. Line intensities of H₂³²S up to $J = 17$ and $K_a = 12$ were measured and modelled to $\pm 2.5\%$ using the 564 intensities of the first triad and 526 intensities of the second triad. The coefficients of the transformed moment expansion were obtained, corresponding to band strengths in cm⁻²/atm at 296 K of 0.33 for 2 ν_2 , 0.45 for ν_1 and 0.12 for ν_3 , 0.03 for 3 ν_2 , 1.82 for $\nu_1 + \nu_3$ and 2.87 for $\nu_2 + \nu_3$.

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